2018 Annual Report on Traffic Congestion in the Denver Region

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Congestion Management Program and VMT growth

5-year trends in demographic, mobility, and travel characteristics

Traffic congestion measures

Incident management and safety
CONGESTION MANAGEMENT PROGRAM AND VMT GROWTH
MPOs are federally required to monitor congestion.

Annual Reports on Congestion since 2006

- Regional vehicle (VMT) and person (PMT) miles traveled
- Roadway networks: physical traits, traffic volumes, transit routes
- Used for TIP and RTP planning and project evaluation
Emerging factors impacting VMT

• Unknown and unpredictable mobility factors
  • Personal habits and preferences
  • Mobility services, transit evolution, TNCs, micromobility
  • Alternative fueled vehicles
  • Connected vehicles
  • Automated vehicles

• Mobility Choice Blueprint
  • Prepare for rapid technological and other innovations affecting mobility
MOBILITY RELATED TRENDS-
PAST FIVE YEARS & FORESEEABLE
Over 40 Miles of passenger rail lines

US-36 Bus Rapid Transit and HOT

I-225 Widening

Union Station
Five-Year Travel Trends

- Population: +8%
- Denver International Airport passengers: +23%
- Working from home: +21%
- Vehicle miles traveled via ride-hailing services: +250%
- E-scooter share of vehicle miles traveled: +Infinity%
Five-Year Travel Trends

-3% transit boardings

+15% vehicle miles traveled

+6% vehicle miles traveled per capita
Five-Year Motor Vehicle Emission Trends

-35% ozone precursor emissions

+507% registered electric vehicles

+2% greenhouse gas emissions
Five-Year Crash and Congestion Trends

+56% annual fatalities

+29% miles congested more than three hours

+26% daily vehicle hours of delay
Five-Year Freight Trends

- +12% Denver International Airport air cargo
- +50% package deliveries
- +80% e-commerce retail sales
TRAFFIC CONGESTION ON MAJOR ROADWAYS
Congestion Mobility Score

**severity:**
- How bad does congestion get on the roadway during rush hour?

**duration:**
- How many hours per day is the roadway congested?

**magnitude:**
- How many people (traffic volume) are impacted by congestion on the roadway?

**reliability:**
- How often do crashes or incidents occur on the roadway?
# Projects Recently Completed or Underway

<table>
<thead>
<tr>
<th>Interchange and roadway projects:</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tower Road at Peña Boulevard: now on-ramp</td>
<td>completed</td>
</tr>
<tr>
<td>E-470 from Parker Road to Quincy Avenue: widening</td>
<td>completed</td>
</tr>
<tr>
<td>I-25 from 120th Avenue to State Highway 7: new managed lanes</td>
<td>underway</td>
</tr>
<tr>
<td>C-470 from Kipling Parkway to I-25: new managed lanes</td>
<td>underway</td>
</tr>
<tr>
<td>I-25 from Castle Rock to El Paso county line: new managed lanes</td>
<td>underway</td>
</tr>
<tr>
<td>Central 70 from I-25 to Chambers Road: new managed lanes</td>
<td>underway</td>
</tr>
</tbody>
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<th>Rapid transit projects:</th>
<th>Status</th>
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<tr>
<td>G Line (Ward Road station to Denver Union Station) commuter rail</td>
<td>completed</td>
</tr>
<tr>
<td>Southeast Rail Extension (Lincoln to RidgeGate Parkway stations) light rail</td>
<td>completed</td>
</tr>
<tr>
<td>North Metro Rail Line (Denver Union Station to Eastlake-124th Station) commuter rail</td>
<td>underway</td>
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</tbody>
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<th>Bicycle/pedestrian projects:</th>
<th>Status</th>
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<tr>
<td>U.S. Route 6 shared use path: Colfax to Johnson Road</td>
<td>completed</td>
</tr>
<tr>
<td>North Metro Rail bicycle/pedestrian access to FasTrack stations</td>
<td>completed</td>
</tr>
<tr>
<td>Nine Mile Station: bicycle/pedestrian access improvements</td>
<td>completed</td>
</tr>
<tr>
<td>23rd Ave bicycle/pedestrian path at Fitzsimons Station</td>
<td>completed</td>
</tr>
<tr>
<td>28th St/U.S. Route 36 multiuse bicycle/pedestrian path: Iris Avenue to Yarmouth Street</td>
<td>completed</td>
</tr>
<tr>
<td>Wonderland Creek underpass and path connection: Foothills Parkway to Diagonal Highway</td>
<td>completed</td>
</tr>
<tr>
<td>C-470 multiuse trail: grade separation at Yosemite Street</td>
<td>underway</td>
</tr>
<tr>
<td>Superior Trail: McCaslin bus rapid transit to Davidson Mesa underpass</td>
<td>underway</td>
</tr>
<tr>
<td>Westerly Creek Trail to Toll Gate Trail Connector</td>
<td>underway</td>
</tr>
<tr>
<td>Boulder Slough multiuse path: 30th Street to Pearl Street</td>
<td>underway</td>
</tr>
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</table>
Mitigating Congestion

**Avoid it**
- Real-Time Information
- Extra Night in Mountains
- Flexible Work Hours
- Telework

**Adapt to it**
- Mobility Choices:
  - *Alternative modes*
  - *Transit, Walk, Bicycle*
  - *Car/Vanpool*
- Real-Time Information
- Efficient Land Use Designs

**Alleviate it**
- Add Lanes / Capacity
- Improve Operations:
  - *Traffic Signals*
  - *Signing and Striping*
  - *Access Management*
  - *Incident Management*
- Expand Transit Facilities
INCIDENT MANAGEMENT
Incident Management

200+ reported crashes every day in Denver region
Many more minor incidents and breakdowns

#1 Concern: **Safety** of persons at the scene or coming upon the scene

Increased travel delays for people and freight in cars, buses, and trucks
Incidents and Traffic Congestion and Unreliability

**Incidents affect roadway carrying capacity**
- Blocking lanes
- Rubber necking
- Snow on pavement

**Incidents cause traffic diversions**
- Heavy traffic on side streets

**Get the information out!**
- Alerts and messages
- People can adjust plans
  - Depart at a different time or cancel trip
  - Use a different travel route or mode of travel
OH COME ON, PEOPLE! YOU'VE ALL SEEN AN ACCIDENT BEFORE. STOP RUBBERNECKING!

ALRIGHT, ALMOST THROUGH IT.. FINALLY!

NOW LET'S SEE WHAT EVERYONE FOUND SO INTERESTING..
Sample 18-Minute Off-Peak Trip

- **off-peak uncongested** (trip takes 18 minutes)
- **peak variation** (daily) adds 8 mins
- **moderate incidents** (monthly) adds 10 mins
- **extreme incidents** (potentially yearly) adds 20+ mins

Unreliability
*Verify before departing!*

Trip Time in Minutes

0 10 20 30 40 50 60
“Planned” or Forecasted Incidents

Areawide forecasted incidents, such as snowstorms

Specific locations scheduled ahead of time
- Construction and utility work zones
- Scheduled events (sporting events, festivals, runs, parades, etc.)

Roadway operation staff, event organizers, and law enforcement agencies can plan ahead

Media and traffic app providers can be notified beforehand
Unplanned Incidents

Occur frequently and cause unreliable travel times:

- Crashes (reported)
- Crashes (not reported)
- Rockfalls, landslides, and avalanches
- Fallen debris on roadways
- Emergency road repairs
- Crime scenes or public disturbances
- Vehicle break-downs
  - CDOT State Farm Safety Patrol
Example Sequence of Events for a Major Incident

1. **Call to 911** – able-bodied person or bystander
2. **Detection** – cameras, apps, management centers
3. **Post and notify** – alerts, apps, media, websites, other agencies
4. **Dispatch and deploy** – required resources and equipment
5. **First responders** arrive – mobilize and manage the scene
6. **Monitor** – off-site impacts (queueing back-ups, detours)
7. **Removal** – as far off road as possible
8. **Investigation and reports** – actions of persons, conditions, clues
9. **Clearance** of entire scene
Emerging Technologies

Connected vehicles and infrastructure

Driver assistance - immediate
- Lane departure, blind spots, automated braking, adaptive headlights

Information alerts – What’s ahead of you?
- Pedestrian in road
- Weather and pavement conditions
- Actions by drivers ahead – turn on fog lights or wipers, brakes engaged
- Events – air bag deployed, traffic lights malfunctioning
- Stop sign or caution signs (e.g. sharp curve, steep grade)
Supporting Efforts

- DRCOG Regional Transportation Operations Working Group
- Governor’s Task Force on Responder Safety
- Standing Program Management Teams
- Traffic Incident Management (TIM) Training
- Legislation: I-70 Mountain Corridor traction and chain laws
QUESTIONS?